Resolution No. 10/05-2

ADVISORY COMMITTEE ON IMMUNIZATION PRACTICES

VACCINES FOR CHILDREN PROGRAM

VACCINES TO PREVENT MEASLES, MUMPS, RUBELLA, AND VARICELLA

The purpose of this resolution is to consolidate all previous resolutions pertaining to measles, mumps, rubella, and varicella vaccines and incorporate the following changes:

1. ***New measles, mumps, rubella, and varicella vaccine (MMRV) formulation.***
2. ***2-dose recommendation for varicella-containing vaccines under certain circumstances.***

VFC resolutions 10/98-1 and 10/98-3 are repealed and replaced by the following:

A. VACCINES TO PREVENT MEASLES, MUMPS AND RUBELLA

1. Eligible groups

   Children at least 12 months of age through 18 years except may be as young as 6 months of age in an outbreak or prior to international travel.
   (See "Recommended Dosage Intervals" regarding revaccination of infants < 12 months of age).

2. Recommended Measles, Mumps and Rubella Vaccine Schedule

   The recommended schedule for measles, mumps and rubella vaccination for children includes two doses of a MMR-containing vaccine given at the following ages:

Age Group	**Dose**
12 -15 months	Primary
4 - 6 years	Second

Catch-Up Vaccination
Previously unvaccinated children older than 15 months should receive the first dose of MMR-containing vaccine as soon as possible. The ACIP recommends that the VFC program should provide the second dose of MMR-containing vaccine to eligible children at any age from 13 months through 18 years, provided that the minimum interval for the formulation being utilized has elapsed following receipt of the first dose of MMR-containing vaccine.

Combination Vaccines
Single antigen measles, mumps or rubella vaccines should be used only if there is a specific contraindication to one component of MMR vaccine, or the child is known to be immune or adequately vaccinated for one or more of these diseases, or measles vaccine is indicated for a child prior to one year of age (e.g., during outbreaks among preschool-aged children). Routine vaccination should only be implemented with MMR or MMRV.

Dosage Intervals

Minimum age for first dose	**Minimum interval from dose 1 to 2**
12 months*	4 weeks

*Although the age for measles vaccinations may be as young as 6 months in outbreak areas where cases are occurring in children <1 year of age, children initially vaccinated before the first birthday should be revaccinated at 12-15 months of age and an additional dose of vaccine should be administered at the time of school entry or according to local policy.

3. Recommended Dosages

Refer to product package inserts.

4. Contraindications and Precautions

The following conditions are contraindications to administration of MMR vaccine, or vaccines which contain one or more MMR component:

a. Allergy to Vaccine Components
Anaphylactic reaction to any component of the vaccine. MMR and its component vaccines contain hydrolyzed gelatin as a stabilizer. Caution should be exercised when administering MMR or its component vaccines to persons who have a history of an anaphylactic reaction to any component of the vaccine (e.g. gelatin or gelatin-containing products). Persons who have experienced anaphylactic reactions to topically or systemically administered neomycin should not receive MMR or any of its component vaccines.

b. Moderate or severe febrile illness

c. Pregnancy
Because of theoretical risk to the fetus, women of childbearing age should receive MMR or its component vaccines only if they state they are not pregnant and are counseled not to become pregnant for 1 month after vaccination. MMR or measles, mumps, or rubella vaccination during pregnancy should not ordinarily be a reason to consider interruption of pregnancy.

d. Known altered immunocompetence
Replication of vaccine viruses can be enhanced in persons with immune deficiency diseases and in persons with immunosuppression. Severe immunosuppression may be caused by many disease conditions (e.g., congenital immunodeficiency, HIV infection, hematologic or generalized malignancy) and by therapy with immunosuppressive agents, including large doses of corticosteroids. For some of these conditions, all affected persons are severely immunocompromised. For other conditions, (e.g., HIV infection), the degree to which the immune system is compromised depends on the severity of the condition, which in turn depends on the disease or treatment stage. Ultimately, the patient's physician must assume responsibility for determining whether the patient is severely immunocompromised based on clinical and laboratory assessment.

The following are considered precautions to administration of MMR (or component) vaccines:

a. Thrombocytopenia
Children with a history of thrombocytopenia purpura or low platelet counts at the time of vaccination may be at increased risk for clinically significant thrombocytopenia following MMR vaccine.

b. Recent receipt of immune globulin (within 3 months or longer; see table 1)
Blood and other antibody containing blood products, including immune globulin (IG) preparations, can diminish the immune response to MMR or its individual component vaccines. MMR or its component vaccines should be given at least 2 weeks before administration of an immune globulin (IG) containing product or deferred until 3 or more months after administration of such preparations.

c. Tuberculosis
Tuberculosis patients with untreated tuberculosis disease should initiate treatment of tuberculosis before receiving MMR vaccine because of a theoretical concern that measles vaccine might exacerbate tuberculosis disease.

Table 1. Time Interval Since Receipt of Immune Globulin

Indications	**Dose (mg IgG/kg)**	**Time interval (mos) before MMR vaccination**
Tetanus prophylaxis (TIG)	250 units (10 mg IgG/kg) IM	3
Hepatitis A prophylaxis (IG) Contact prophylaxis International travel	 0.02 mL/kg (3.3 mg IgG/kg) IM 0.06 mL/kg (10 mg IgG/kg) IM	 3 3
Hepatitis B prophylaxis (HBIG)	0.06 mL/kg (10 mg IgG/kg) IM	3
Rabies prophylaxis (HRIG)	20 IU/kg (22 mg IgG/kg) IM	4
Varicella prophylaxis (VZIG)	125 units/10 kg (20–40 mg IgG/kg) IM (maximum 625 units)	5
Measles prophylaxis (IG) - Standard (i.e., nonimmunocompromised contact) - Immunocompromised contact	 0.25 mL/kg (40 mg IgG/kg) IM 0.50 mL/kg (80 mg IgG/kg) IM	 5 6
Cytomegalovirus intravenous immune globulin	150mg IgG/kg maximum IV	6
Blood transfusion: - Red blood cells (RBCs), washed - RBCs, adenine-saline added - Packed RBCs (Hct 65%)* - Whole blood (Hct 35%–50%)* - Plasma/platelet products	 10 mL/kg (negligible IgG/kg) IV 10 mL/kg (10 mg IgG/kg) IV 10 mL/kg (60 mg IgG/kg) IV 10 mL/kg (80–100 mg IgG/kg) IV 10 mL/kg (160 mg IgG/kg) IV	 0 3 6 6 7
Replacement therapy for immune Deficiencies**	300–400 mg/kg IV (as IVIG)	8
Respiratory syncytial virus prophylaxis	750 mg/kg IV (as RSV-IGIV)	9
Treatment of: -Immune thrombocytopenic purpura (ITP) -Kawasaki disease	 400 mg/kg IV (as IGIV) 1000 mg/kg IV (as IGIV) 2 g/kg IV (as IGIV)	 8 10 11

Note: This table is not intended for determining the correct indications and dosage for the use of immune globulin preparations. Unvaccinated persons may not be fully protected against measles during the entire suggested time interval, and additional doses of immune globulin and/or measles vaccine may be indicated after measles exposure. The concentration of measles antibody in a particular immune globulin preparation can vary by lot. The rate of antibody clearance after receipt of an immune globulin preparation can vary. The recommended intervals are extrapolated from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.

*Assumes a serum IgG concentration of 16 mg/mL

**Measles vaccination is recommended for HIV-infected children who do not have evidence of severe immunosuppression, but it is contraindicated in persons with severe immunosuppression from HIV or any other immunosuppressive disorder.

Abbreviations: HBIG=hepatitis B immune globulin; Hct=hematocrit; HRIG=human rabies immune globulin; IG=serum immune globulin; IGIV=immune globulin, intravenous; IM=intramuscularly; IV=intravenously, RBCs=red blood cells; RSV-IGIV=respiratory syncytial virus immune globulin, intravenous; TIG=tetanus immune globulin; VZIG=varicella zoster immune globulin.

B. VACCINES TO PREVENT VARICELLA

1. Eligible groups

   Children at least 12 months of age through 18 years who do not have evidence of varicella immunity.

2. Recommended Varicella Vaccine Schedule

   A varicella-containing vaccine is recommended as a single dose as part of the routine childhood immunization schedule at 12-18 months of age. Two doses are required for children ≥ 13 years of age.

   Catch-Up Vaccination
   The ACIP recommends varicella vaccine for children who are at least 19 months old and do not have evidence of immunity to prevent disease due to and transmission of varicella.

   Outbreak Response
   For those children who are 12 months of age or older for whom additional protection from varicella disease is desired in response to an outbreak, a second dose may be administered.

   Dosage Intervals for children ≥ 13 years of age or who receive 2 doses in response to an outbreak.

Minimum age for first dose	**Minimum interval from dose 1 to 2**
12 months	3 months if first dose is administered at < 13 years of age 4 weeks if first dose administered at ≥ 13 years of age

3. Recommended Dosages

   Refer to product package inserts.

4. Contraindications and Precautions

   The following conditions are contraindications to administration of varicella vaccine, or vaccines which contain varicella vaccine component:

   a. Allergy to vaccine components
   Anaphylactic reaction to the vaccine or a constituent of the vaccine (e.g. gelatin or neomycin).

   b. Moderate or severe illnesses with or without fever
   Varicella vaccine can be administered to persons with minor illness, such as diarrhea, mild upper respiratory tract infection, with or without low grade fever, or other illnesses with low grade fever. Persons with an illness associated with a moderate or severe fever should be vaccinated as soon as they have recovered from the acute phase of the illness. Although no data exist regarding whether either varicella vaccine or live varicella virus vaccine exacerbates tuberculosis, vaccination is not recommended for persons who have untreated, active tuberculosis. Tuberculin skin testing is not a prerequisite for varicella vaccination.

   c. Altered immune status
   Altered immune status due to: malignant condition (blood dyscrasia, leukemia, lymphoma, or other neoplasms affecting the bone marrow or lymphatic system); cellular immunodeficiency; family history of congenital or hereditary immunodeficiency, unless immune competence of possible vaccine recipient is demonstrated; and individuals receiving immunosuppressive therapy.*

   d. Receipt of blood products

Varicella virus vaccine should not be given for at least 5 months after receipt of blood (except washed red blood cells) or plasma transfusions, immune globulin, or varicella zoster immune globulin. In addition, IG and VZIG should not be administered for 3 weeks after vaccination unless the benefits exceed those of vaccination.

e. Steroid therapy
Receiving doses of systemic prednisone or equivalent at a dose of > 2 mg/kg of body weight per day or 20 mg/day.

f. Exposure of immunocompromised persons to vaccinees
In persons who develop a rash post-vaccination, there is a minimal risk of transmission of vaccine virus to close contacts. Thus, vaccinees in which vaccine-related rash develops, particularly health care workers and household contacts of immunocompromised persons, should avoid contact with susceptible persons who are at high risk of serious complications.

g. Salicylates
Due to the association between wild varicella zoster infection, salicylates, and Reye syndrome, if feasible, vaccine recipients should avoid using salicylates for 6 weeks after receiving varicella virus vaccine. Vaccination with subsequent close monitoring should be considered for children who have conditions requiring theraputic aspirin because the risk for serious complications associated with aspirin is likely to be greater in children in whom natural varicella disease develops than in children who receive the vaccine containing attenuated varicella zoster virus.

h. Pregnancy
It is prudent on theoretical grounds to avoid vaccinating pregnant women and to advise non-pregnant women who are vaccinated to avoid becoming pregnant for one month following each injection.

i. Nursing mothers
A small study of excretion of varicella vaccine virus in human milk showed no evidence of vaccine virus in 217 postvaccination human milk specimens and no evidence of transmission from vaccinated mothers to six seronegative babies tested for varicella zoster virus DNA. In addition, most live vaccines have not been demonstrated to be secreted in human milk. Therefore, varicella vaccine may be considered for a nursing mother.

C. USE OF MMRV

1. MMRV is approved for children age 12 months to 12 years. MMRV is not indicated for vaccination of children <1 year of age.
2. **MMRV should not be administered for the second dose of MMR except when a dose of a varicella vaccine is also indicated or if no MMR is available at the time the second dose of MMR is indicated.** For dosage interval information on MMRV, please refer to the product package insert.

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